AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Currently Amended) A method for performing magnetic force microscopy comprising:

providing a probe comprising a material having temperature-dependent magnetic properties that allow a magnetic moment of the probe to be modulated in a range of temperatures above a Curie temperature of the material, the probe having a tip adapted for observing a surface of a sample; and

heating the probe.

2. (Original) The method of claim 1, wherein the probe tip is tapered.

3. (Original) The method of claim 1, wherein the step of heating the probe comprises:

heating the probe using a time-varying heat source.

4. (Original) The method of claim 1, wherein the probe is coated with the material having temperature-dependent magnetic properties.

5. (Original) The method of claim 1, wherein the probe comprises:

a ferromagnetic or paramagnetic material.

6. (Original) The method of claim 5, wherein said ferromagnetic or paramagnetic material has a low Curie temperature.

7. (Original) The method of claim 1, wherein the probe comprises a ferrimagnetic

material.

8. (Previously Presented) The method of claim 7, wherein the probe comprises a Gd-Fe alloy, a Gd-Co alloy, a Tb-Fe alloy, a Tb-Co alloy, a Dy-Fe alloy or a Dy-Co alloy.

9. (Original) The method of claim 5, wherein the step of heating the probe comprises:

oscillating the temperature of the probe over a range of values having a lower limit below a compensation temperature of the probe material and an upper limit above the compensation temperature.

10. (Original) The method of claim 1, wherein the step of heating the probe comprises:

focusing a laser on the tapered tip of the probe.

11. (Original) The method of claim 10, wherein the step of focusing the laser further comprises:

modulating the laser power that heats the probe tip.

12. (Original) The method of claim 1, wherein the step of providing the probe further comprises:

providing a two-conductor electrode to the probe tip.

13. (Original) The method of claim 12, wherein the step of heating the probe comprises:

coupling a current source to the probe; and

applying a current to the probe.

14. (Original) The method of claim 1, wherein the step of heating the probe comprises:

heating a magnetic coating on the tip from within a core of the probe.

15. (Previously Presented) The method of claim 14, wherein the probe comprises a transparent material coated with said magnetic coating.

16. (Original) The method of claim 15, wherein the probe comprises an optical fiber pulled to form a probe.

17. (Original) The method of claim 15, wherein the step of heating the core of the probe comprises focusing a laser through the core of the probe.

18. (Currently Amended) A magnetic force microscope comprising:

a cantilever that oscillates, wherein the cantilever has a first end and a second end;

a probe coupled to the second end of the cantilever, wherein the probe has a tip comprising a low Curie temperature material that allows a magnetic moment of the probe tip to be modulated in a range of temperatures above the Curie temperature;

a laser adapted for illuminating the second end of the cantilever;

an optical detector adapted for detecting light reflected by the cantilever; and

a heat source adapted for heating the probe.

19. (Original) The magnetic force microscope of claim 18, wherein the heat source is a time-varying heat source adapted to modulate heat to the probe.

20. (Currently Amended) A magnetic force microscope comprising:

a cantilever that oscillates, the cantilever having a first end and a second end;

a probe coupled to the second end of the cantilever, the probe having a tapered tip comprising a ferrimagnetic material that allows a magnetic moment of the probe to be modulated in a range of temperatures above a Curie temperature of the ferrimagnetic material;

a motion detector adapted for detecting deflection of the cantilever; and

a heat source adapted for heating the probe.

21. (Original) The magnetic force microscope of claim 19, wherein the heat source is a time-varying heat source adapted to modulate heat to the probe.